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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/598,406	06/21/2000	Gerhard Hoppen	016790/0398	6205

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EXAMINER

CHANG, AUDREY Y

ART UNIT	PAPER NUMBER
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2872

DATE MAILED: 04/10/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/598,406

Applicant(s)

HOPPEN, GERHARD

Examiner

Audrey Y. Chang

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 January 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 and 22-24 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 and 22-24 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other:

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on *January 9, 2003* has been entered.
2. This Office Action is also in response to applicant's amendments filed on June 16, 2002 and January 9, 2003, which have been entered as paper numbers 12 and 18.
3. By these amendments, the applicant has amended claims 1, 10-16, 19, and 22-23, has canceled claim 21 and has newly added claim 24.
4. Claims 1-20 and 22-24 remain pending in this application.
5. The rejection to claims 1-23 under 35 USC 112, first paragraph, set forth in the previous Office Action are withdrawn in response to applicant's amendments.

Response to Amendment

6. The declaration under 37 CFR 1.132 filed January 9, 2003 is sufficient to overcome the rejection of claims 1-23 based upon 35 USC 112, first paragraph.
7. The amendment filed on January 9, 2003 is objected to under 35 U.S.C. 132 because it introduces new matter into the disclosure. 35 U.S.C. 132 states that no amendment shall introduce new matter into the disclosure of the invention. The added material which is not supported by the original disclosure is as follows: **Claims 1, 19, 22 and 23 have been amended** to include the features that the objective has a DUV focus at a *DUV wavelength greater than or equal to 235 nm*, and has an IR focus for an *IR*

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wavelength greater than or equal to 760 nm, wherein the two focal points are the same point, (please see the following paragraphs for the reasons of non-supportiveness).

Applicant is required to cancel the new matter in the reply to this Office Action.

Claim Rejections - 35 USC § 112

8. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

9. **Claims 1-18, 19-20, 22-23 and 24 are rejected under 35 U.S.C. 112, first paragraph**, as containing subject matter which was not described in the specification in such a way as to **enable** one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

10. **Claims 1-18, 19-20, and 22-23 are rejected under 35 U.S.C. 112, first paragraph**, as containing subject matter which **was not described** in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claims 1, 19, 22 and 23 have been amended to include the feature that the objective has a DUV focus at a *DUV wavelength greater than or equal to 235 nm*, and has an IR focus for an *IR wavelength greater than or equal to 760 nm*, wherein the two focal points are the same point. However the specification **fails** to teach how could the objective to have same focal point for DUV light having wavelength *equal or greater* than 235 nm and for IR light having wavelength *equal or greater* than 760 nm. *The specification only teaches* that the same focal point can be designed for light having *a single wavelength* in the DUV wavelength range (such as 235 nm +/- 8 nm) and for light having *a single wavelength* in the IR wavelength range. Figures 9-12, and 23-25 clearly shows that the same focal point

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design can only occur for *a single wavelength* in the DUV and in the IR wavelength ranges, for a single design of the objective. The same focal point feature **does not hold** for a **range** of wavelengths such as “*equal or greater than 235 nm*” or “*equal or greater than 760 nm*”, which implies (1) more than one wavelengths in each of the regions, (2) visible wavelength region, which has wavelength greater than 235 nm, and (3) any wavelength greater than 760 nm will be able to achieve single focal point feature for the single design of the objective.

The specification also **fails** to teach how could the same focal point can be achieved for light in DUV and IR range when the objective **only** has a penultimate lens element with concave configuration on the both side as recited in the newly submitted claim 24. The biconcave configuration is **part** of the design for the objective but is not the **only essential** factor for the objective to achieve the same focal point feature.

Clarifications are required. Claims 2-18, 20, and 23 inherit the rejection from their respective based claim.

11. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

12. **Claims 19-20 and 22-23 are rejected under 35 U.S.C. 112, second paragraph**, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The phrase “IR laser autofocus system ... to *provide* the IR wavelength” recited in claim 19 is confusing, in error and indefinite since it is not clear how can an autofocus system provide a wavelength which is a number. The autofocus system is capable of *focusing an incident light* but it *does not* generate a light not to mention to generate a wavelength. Claim 20 inherits the rejection.

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The phrase "and an IR wavelength" recited in claim 22 is vague and indefinite since it is not clear what does this phrase means. Claim 23 inherits the rejection.

Claim Rejections - 35 USC § 103

13. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

14. **Claims 1, 2, 5, 6, 17-18, 19-20, and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over the patent issued to Hayashi (PN. 5,121,255) in view of Hecht et al (Optics, Addison and Wesley 1979, pages 186-191).**

Hayashi teaches an **objective system** for *microscope* that is usable with light in *far ultraviolet* (or deep ultraviolet), *visible and infrared wavelength regions* wherein the objective lens system comprises *a plurality of lens elements made of quartz and fluorite* and with *the penultimate lens element* (23, Figure 4) having *a biconcave configuration* with the *object side radius* being *smaller* than the *image side radius*. Hayashi teaches explicitly that the biconcave configuration of lens made of quartz, having negative power, and the biconvex configuration of lens made of fluorite, having positive power, makes the objective system capable of *correcting chromatic aberration* in the operable wavelength ranges, which includes the deep ultraviolet, visible and the infrared wavelength ranges, (please see Figure 4, column 6, lines 1-9). It is known in the art that chromatic aberration of the lens system is the main factor causing the lens system to have different focal length for light of different wavelength. The disclosure concerning the correction of chromatic aberration and the same design for the penultimate lens and the same materials used for the objective system therefore *implicitly* suggests that the same focal point for light in

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the deep ultraviolet and in the infrared wavelength regions is achieved. However it would also have been obvious to one skilled in the art to apply the standard teachings of Hecht et al, particular with the formula (6.50), to design the lens system to have the same focal point for light having deep ultraviolet and infrared wavelength, for such technique is standard and quite well known in the art, and for the benefit of allowing the light having different wavelength to focus at the same point which will therefore reduce the size of the optical system using the objective system. It is a standard knowledge in the art that near infrared light has wavelength greater or equal to 760 nm and deep ultraviolet light has wavelength greater or equal to 235 nm.

With regard to claim 17, near infrared light has wavelength ranges as far as 3000 nm. With regard to claim 18, although the Hayashi reference does not teach explicitly about the focal length, however by the standard knowledge of Hecht et al it would have been obvious matters of design choice to one skilled in the art to design the focal length to assume the claimed value for the benefit of providing desired focus function.

With regard to claim 19, these references do not teach explicitly to use the objective with an autofocus system. However such difference is mainly referred to how to use the objective and since infrared autofocus system is quite well known in the art such modification would have been obvious to one skilled in the art for the benefit of providing automatic focus means.

Response to Arguments


15. Applicant's arguments with respect to claims 1-20 and 22-24 have been considered but are moot in view of the new ground(s) of rejection. The newly amended claims and newly added claim have been fully considered and they are rejected for the reasons stated above.

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16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Audrey Y. Chang whose telephone number is 703-305-6208. The examiner can normally be reached on Monday-Friday (8:00-4:30), alternative Mondays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cassandra Spyrou can be reached on 703-308-1637. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9318 for regular communications and 703-872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.


A. Chang, Ph.D.
April 3, 2003

Audrey Y. Chang
Primary Examiner
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